

IN THE CLAIMS:

Claims 1-22 have been amended herein. All of the pending claims 1 through 22 are presented below. This listing of claims will replace all prior versions and listings in the application. Please enter these claims as amended.

1. (Currently Amended) A computer system comprising:
a computer having a circuit board therein; and
at least one semiconductor assembly mounted to ~~said the~~ circuit board, ~~said the~~ at least one semiconductor assembly comprising:
a substrate having a first surface, a second surface and at least one opening therethrough, ~~said the~~ at least one opening in ~~said the~~ substrate extending from ~~said the~~ first surface to ~~said the~~ second surface of ~~said the~~ substrate;
a semiconductor die having an active surface and a back surface, ~~said the~~ active surface of ~~said the~~ semiconductor die attached to ~~said the~~ first surface of ~~said the~~ substrate;
a plurality of bond wires extending through ~~said the~~ at least one opening in ~~said the~~ substrate and bonded from ~~said the~~ active surface of ~~said the~~ semiconductor die to ~~said the~~ second surface of ~~said the~~ substrate; and
a plurality of conductive bumps disposed between ~~said the~~ active surface of ~~said the~~ semiconductor die and ~~said the~~ first surface of ~~said the~~ substrate.
2. (Currently Amended) The computer system of claim 1, further comprising a processor device electrically connectable to ~~said the~~ at least one semiconductor assembly.
3. (Currently Amended) The computer system of claim 2, further comprising an input device electrically connectable to ~~said the~~ processor device.
4. (Currently Amended) The computer system of claim 2, further comprising an output device electrically connectable to ~~said the~~ processor device.

5. (Currently Amended) The computer system of claim 1, wherein ~~said~~ the at least one semiconductor assembly further comprises a filler material located between ~~said~~ the semiconductor die and ~~said~~ the substrate.

6. (Currently Amended) The computer system of claim 1, wherein ~~said~~ the plurality of conductive bumps comprises power and ground connections between ~~said~~ the semiconductor die and ~~said~~ the substrate.

7. (Currently Amended) The computer system of claim 1, wherein ~~said~~ the plurality of conductive bumps comprises a portion of signal routing between ~~said~~ the semiconductor die and ~~said~~ the substrate.

8. (Currently Amended) The computer system of claim 1, wherein ~~said~~ the plurality of bond wires and ~~said~~ the plurality of conductive bumps comprise signal routing between ~~said~~ the semiconductor die and ~~said~~ the substrate.

9. (Currently Amended) The computer system of claim 1, wherein ~~said~~ the at least one semiconductor assembly further comprises a sealant material encapsulating at least ~~said~~ the plurality of bond wires.

10. (Currently Amended) The computer system of claim 9, wherein ~~said~~ the sealant material substantially encapsulates exposed portions of ~~said~~ the semiconductor die.

11. (Currently Amended) The computer system of claim 1, wherein ~~said~~ the at least one semiconductor assembly further comprises interconnect bumps disposed on ~~said~~ the second surface of ~~said~~ the substrate.

12. (Currently Amended) The computer system of claim 11, wherein ~~said the~~ interconnect bumps interconnect with ~~said the~~ circuit board.

13. (Currently Amended) The computer system of claim 12, wherein a filler material is disposed between ~~said the~~ second surface of ~~said the~~ substrate and ~~said the~~ circuit board.

14. (Currently Amended) The computer system of claim 1, wherein ~~said the~~ at least one opening of ~~said the~~ substrate of ~~said the~~ at least one semiconductor assembly is substantially centrally located in ~~said the~~ substrate.

15. (Currently Amended) The computer system of claim 14, wherein ~~said the~~ semiconductor die is attached to ~~said the~~ substrate having centrally located bond pads on ~~said the~~ active surface of ~~said the~~ semiconductor die exposed through ~~said the~~ at least one opening and outer bond pads on ~~said the~~ active surface of ~~said the~~ semiconductor die are mirrored with bond pads on ~~said the~~ first surface of ~~said the~~ substrate having ~~said the~~ plurality of conductive bumps therebetween.

16. (Currently Amended) The computer system of claim 1, wherein ~~said the~~ at least one opening of ~~said the~~ substrate of ~~said the~~ at least one semiconductor assembly comprises a plurality of openings extending proximate more than one side of a periphery of ~~said the~~ substrate.

17. (Currently Amended) The computer system of claim 1, wherein ~~said the~~ at least one opening of ~~said the~~ substrate of ~~said the~~ at least one semiconductor assembly extends proximate more than one side of a periphery of ~~said the~~ substrate.

18. (Currently Amended) The computer system of claim 16, wherein ~~said the~~ semiconductor die is attached to ~~said the~~ substrate having peripheral bond pads on ~~said the~~ active surface of ~~said the~~ semiconductor die exposed through ~~said the~~ plurality of openings and

centrally located bond pads on ~~said the~~ active surface of ~~said the~~ semiconductor die are mirrored with bond pads on ~~said the~~ first surface of ~~said the~~ substrate having ~~said the~~ plurality of conductive bumps therebetween.

19. (Currently Amended) A computer system comprising:
a processor device electrically connected to a circuit board; and
at least one semiconductor assembly mounted to ~~said the~~ circuit board, ~~said the~~ at least one semiconductor assembly comprising:
a substrate having a first surface, a second surface and at least one opening therethrough,
~~said the~~ at least one opening in ~~said the~~ substrate extending from ~~said the~~ first surface to ~~said the~~ second surface of ~~said the~~ substrate;
a semiconductor die having an active surface and a back surface, ~~said the~~ active surface of ~~said the~~ semiconductor die attached to ~~said the~~ first surface of ~~said the~~ substrate;
a plurality of bond wires extending through ~~said the~~ at least one opening in ~~said the~~ substrate and bonded from ~~said the~~ active surface of ~~said the~~ semiconductor die to ~~said the~~ second surface of ~~said the~~ substrate; and
a plurality of conductive bumps disposed between ~~said the~~ active surface of ~~said the~~ semiconductor die and ~~said the~~ first surface of ~~said the~~ substrate.

20. (Currently Amended) The computer system of claim 19, further comprising an input device electrically connectable to ~~said the~~ processor device.

21. (Currently Amended) The computer system of claim 19, further comprising an output device electrically connectable to ~~said the~~ processor device.

22. (Currently Amended) A computer comprising:
a computer having a circuit board therein having a circuit thereon; and
at least one semiconductor assembly connected to the circuit of the circuit board, ~~said the~~ at least one semiconductor assembly comprising:
a substrate having a first surface, a second surface and at least one opening therethrough,
~~said the~~ at least one opening in ~~said the~~ substrate extending from ~~said the~~ first surface to ~~said the~~ second surface of ~~said the~~ substrate;
a semiconductor die having an active surface and a back surface, ~~said the~~ active surface of ~~said the~~ semiconductor die attached to ~~said the~~ first surface of ~~said the~~ substrate;
a plurality of bond wires extending through ~~said the~~ at least one opening in ~~said the~~ substrate and bonded from ~~said the~~ active surface of ~~said the~~ semiconductor die to ~~said the~~ second surface of ~~said the~~ substrate; and
a plurality of conductive bumps disposed between ~~said the~~ active surface of ~~said the~~ semiconductor die and ~~said the~~ first surface of ~~said the~~ substrate.